

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington DC 20554**

In the matter of:)	
)	
Amendment of Part 97 of the)	RM-11305
Commission's Rules Governing the)	
Amateur Radio)	

Comments Regarding the Petition to Deregulate Spectrum Allocation in the Amateur Radio Service Filed by the "Communications Think Tank" on 20 June 2005.

I, Albert J. Schramm, W3MIV, am a licensed amateur radio. I enjoy no position or privilege beyond that of any other radio amateur of my license class. The statements I put forth in this comment are my own, and they do not necessarily reflect the views of any other amateur radio licensee, or those of any group or coalition.

Introduction

The petitioners would "deregulate" operations on the high-frequency bands, opting instead to permit a free-wheeling mix of modes and bandwidths pared of any delineations other than that of license class. They state at the outset their goal to "discontinue mandatory segregation of emission modes and the activities using these modes in the Amateur Service, and substitute a voluntary system of coordination to achieve a greater, and more efficient, utilization of frequency allocations with the

amateur radio service bands.”¹ In order to bolster the arguments to follow, the petitioners seek to set the stage by casting their appeal as a means of fostering incentive licensing while “addressing an imbalance in our ability to use amateur allocations in the high-frequency ‘shortwave’ bands. Amateur activity in these bands favors voice communications [reference deleted],² and there is a chronic need to allow a greater leeway in selecting a place to operate within our frequency range. Such flexibility is currently constrained by FCC regulations defining sub band frequency allocation by mode of operation.”

Discussion

There is an appealing and, indeed, admirable simplicity to the petitioners’ goal. At first blush, the egalitarian homogenization of modes and bandwidths and manned or unmanned operations would seem to provide a positive benefit to everyone, and with minimal need for oversight or input from the Commission. It is an idea that harkens back to a former time, an age when fewer and lowered powered stations could coexist in amity and easy cooperation in uncluttered spectrum. Times have changed. Such a vision is a chimera, and the result of the adoption of this petition, or any other attempt to remove all restraints, will be bedlam.

Petitioners tell us that their request “is centered on the premise that all operating interests and emission types enjoy equal status in the amateur service.” One is minded of the old saw about “where does the 900-pound gorilla sit?” To view all segregation by

¹ Introduction, CTT Petition RM-11305.

² Reference to Appendix A of petition.

any categories other than simple license class as an undesirable hindrance is to misunderstand the value of certain vital lines of demarcation. Imagine, for a moment, a boxing match in which a heavy-weight could enter the contest against a fly-weight, or a sailing race where dinghies are pitted against 12-metre sloops. These illustrations may appear silly at first glance, but they elucidate a serious and worrisome issue that will be exacerbated by any attempt to mix modes and bandwidths without some fixed and dependable lines of separation. If the analogies seem to connote an emphasis on competition, it is because a competitive response to any demanding or stimulating situation is both normal and natural to all humans, as is readily evident during contests and other peak operating periods under the present system of mode allocation. To expect human nature to change because the rules have changed is both naïve and counterproductive for the future of the Amateur Radio Service.

The briefest audition of the HF bands will show beyond any shadow of a doubt that phone, whether AM or SSB, is far and away the most popular mode of communication. Without some measure of restraint, phone will occupy every available Hertz of spectrum on which it is allowed, and very quickly it will become a match of watts versus watts, followed swiftly by kilowatts versus kilowatts, unleashing the kinds of “contests” now all too evident at times on the 11-meter band. While these “nine-hundred-pound gorillas” joust and contest, where will the rest of us find sanctuary, if not actual solace?

Bandwidth frequency allocations, such as those proposed by the American Radio Relay League’s (ARRL) petition, RM-11306, offer a far better hope for the development

of the goals sought by the petitioners in RM-11305, in that the ARRL approach permits a measure of sanctuary to those who would use narrow-bandwidth modes or low-power output for operation. Additionally, the ARRL approach adheres far more closely to other current band planning schemes now in effect. Indeed, the ARRL petition broadly parallels the band plan adopted by IARU Region I as of January 1, 2006, and provides a better basis to achieve higher band occupancy at minimal levels of interference.

The Telegrapher on the Roof

Tevye might have made a good ham. Tradition, not rules and regulations, is the glue that binds the Amateur Radio Service. On this theme, I am in full agreement with the CTT petitioners; voluntary cooperation and the flexibility to better utilize spectrum to the greatest extent, is a hallmark of the American amateur. Over the years, peer pressure and friendly counsel have proven far more effective and beneficial than all of the rules and enforcement power of the Federal Government. Yet this tradition of cooperation and good conduct has been coming under increasing assault over the past score or so of years. A succession of changes, both within amateur radio circles and in our society as a whole, has contributed, credulously perhaps but nonetheless prejudicially, to a steady erosion of the good will that must accompany any scheme for so broad a realignment as this petition demands. There can be little doubt that this erosion will be exacerbated by the anticipated increase in number of new operators on HF once a final R&O has been issued for NPRM&O 05-235. The result likely will be exactly the opposite of that predicted by petitioners.

Whether the potential flood of “newbies” will be “Biblical” or not is open to debate. What is all too certain, however, is that the vast majority of newly licensed entrants to HF operation will lack the benefit of having “rubbed shoulders” with far more experienced hams in arenas given over solely to their novitiate, and to the development of courteous and temperate operating skills. Now, of a sudden, they will be expected to understand and acquiesce in customs and nuances of habit that they may find strange, and may often seem objectionable or superfluous. Confronted by many established hams of vintage, wholly needless friction may be more a part of our future than any hope of tender collegiality. The simple act of segregating by bandwidths, as proposed by the ARRL in RM-11306, will tend to relieve much of the worry about this sort of friction by offering sanctuaries to the various non-phone modes that, although distinct and incompatible, nevertheless can fit together with far less potential for trouble when matched by *any* standard rather than by *no* standard.

The current state of the solar cycle is such that any confusion and interference that results from attempting to mix and match modes and operating techniques under a fully deregulated spectral scheme will mean that most of the problems remain mercifully domestic. For now. In just a few years, however, the cycle will again swing upward and carry the result of any mismanagement on our part now to the rest of the world on a few fractions of a watt. Shall we then have to resort to another series of petitions to return order from chaos? Would it not be far more prudent now just to deny this petition on the simple basis that it will promote aspects of “jungle law” that are best kept at a distance from the Amateur Radio Service. Do we not already have enough contention and misconduct blighting a long and honored history?

Again, I remind the Commission gently that the ARRL petition, RM-11306, flawed as it may be in some respects³, broadly follows much of the band plan now in effect in IARU Region I. RM-11305, if ordained into regulation, will accord with any such plan only by sheerest accident, raising the potential for much unnecessary international interference and consequent violations of treaty agreements and loss of the good will that American amateurs have worked to accrue over a very long time.

"Klaatu berada nikto!"

Would that all robots were as compassionate and as sensitive as Gort, ⁴ whose timely intervention saved Klaatu and paved the way for a reawakening of Earth's citizenship in the "social structure" of the Universe. Alas, our indigenous ham robots are neither so compassionate nor so sensitive. Indeed, experience over the past decade has shown the wisdom of the Commission's 1995 decision to sequester all automatic operations in their own sub-bands, thus easing the growing friction between manned and unmanned stations. The petition under review in this comment would undo all of that good work and good will.

By throwing off all restrictions on bandwidths and modes of operation, RM-11305 will create an even more serious issue with regard to automatically controlled and remotely controlled operations than the companion petition filed by the ARRL. In some respects, of course, both the League's petition (RM-11306) and the currently considered petition by the CTT, are similar. Both would permit the rampant abuse of

³ I have filed a separate comment via ECFS with regard to RM-11306 in which I discuss the flaws I believe significant enough to warrant changes before adoption of the ARRL petition.

⁴ Robot in *The Day the Earth Stood Still*, 1951 motion picture from 20th Century Fox.

spectrum by WinLink 2000 clients using the Amateur Radio Service as a substitute for readily available commercial email-by-HF services. In fact, RM-11305 is actually more injurious to the future of amateur radio in the US because it offers no limits or hindrance to the growth of remotely controlled robot mailboxes, whereas the ARRL petition at least seeks to create a veneer of control. I have included a somewhat more detailed discussion of the problems attendant to unfettered robot (remotely controlled) operations under RM-11305 in Appendix A, immediately following.⁵

The Band Survey

Lastly, and in so far as any relevance to changing the entire basis of the Rules governing the Amateur Radio Service, least as well, is the matter of the survey attached as Appendix A of the petition. During this waning solar cycle, a single station, in a single location, for twelve hours on a single day monitored three bands and now presents the facile result as a “typical operating day” to apply as a standard for purposes of defining regulations to govern all of the Amateur Radio Service.

The petitioners contend: “We may conclude from this study that CW occupancy of the bands evaluated is significantly less than phone use of the same bands at the same time ...” I do not challenge this conclusion; indeed, I do not need the survey to agree with the conclusion, but neither do I pronounce that conclusion to be scientifically valid or even noteworthy.

⁵ Appendix A to this comment, is largely taken from the discussion of WinLink robots and their effects on the amateur bands that I included in my comments to RM-11306. The content of Appendix A is as applicable to this petition as it was to the petition for which the comments were recently filed via ECFS.

I submit that the use of any such “survey” of three bands for twelve hours to find that CW operations are less than phone operations does not in any manner or form justify the total dedication of all HF bands to wide-band phone use. And to base the allocation of HF spectrum on the basis of such a “survey” would be grossly irresponsible, not to mention utterly unfair to all other modes.

Recommendation

I urge the Commission to reject this petition in its entirety. Not only do I find no merit in its provisions, but, to the contrary, I find in it the basis of an amateur radio anarchy that will only benefit high-powered, wide-band phone operations to the detriment of ***all*** else, including even the remotely controlled operations that would otherwise benefit from the removal of all regulatory restraints.

If, in presenting my comments, I have sought to include a little levity that should not be seen as a dilution of the objections to what I perceive to be a very seriously flawed petition.

I thank the Commission for giving me the opportunity to present my views and make them a part of the public record.

A handwritten signature in black ink, appearing to read 'A. Schramm', with a horizontal line extending to the right.

Albert J. Schramm, W3MIV

Appendix A

RM-11305 and RM-11306 share a mutual flaw that, alone, is sufficient in my view to warrant rapid dismissal of either. This mutual flaw is the potential to nurture the misuse of WinLink 2000 without restraint, as well as the potential for serious interference that will result with widespread, unrestricted use of this and similar “store-and-forward” communications protocols throughout the high-frequency bands. Much of the outrage expressed by the most vocal critics of WinLink 2000 centers on that system’s reliance on PacTOR (particularly PacTOR III—a patented, digital communications protocol typically about 2.4kHz in bandwidth that is not readily decipherable except by costly proprietary hardware) and on the transmission of email traffic that many insist could as easily be confined to the commercial internet in most cases.

WinLink 2000 (hereafter WL2K) is a valuable and fast-growing tool, especially for emergency communications above 30MHz. The value of new ideas of every sort is measured by their acceptance, and by that measure alone, WL2K must be accorded great success, particularly with regard to its applications by a growing number of emergency communications networks among Amateur, public and private agencies and associations. While most of the value of WL2K as an emergency communications tool has been realized in the VHF/UHF spectrum, it is also showing itself to be fairly robust and efficient for some uses on high-frequency bands over greater distances than are often achievable above 30MHz, this despite the anomalies of high-frequency operation that often render many digital modes ineffective. By most measures, WL2K

has proven itself to be an important and effective tool of a type that needs to be accommodated by any revision of the regulations governing the Amateur Radio Service.

If there is any serious deficiency to WL2K and its reliance on PacTOR protocols for operations, it is to be found in a wide bandwidth and in the “horizontal” nature of the system demanded by the PacTOR protocols. Though now regarded as “obsolete” by many, HF Packet operations were developed to handle several users within a vertical, or “serially interleaved” hierarchy in which the individual message packets are identified by session and user so that multiple users may participate on the same frequencies at the same time. Conventional HF packet is conservative of spectrum. Using the conventional AX.25 protocol, Packet operations may be seen as too slow for heavy message traffic, yet with advancements like the Q15X25 protocol, throughput may actually rival PacTOR’s best performances. WL2K’s reliance on PacTOR (regardless of which iteration of the protocol is chosen) cannot accommodate multiple users on the same frequency at the same time. Each user’s message traffic must clear fully before the next user can access the mailbox (PMBO), an enforced wait that may prove frustrating to many users when all of the PMBOs within their reach are busy. Since each PacTOR link must occupy its own frequency channel, this multiplies the amount of spectrum demanded by the operation of several simultaneous PacTOR III links substantially. Though the present level of WL2K use is limited, the growing acceptance of this system means that its use will grow at an accelerating pace. As this growth takes place, each new WL2K PMBO will require its own separate “channel” of somewhat more than 3 kHz, which it will guard for traffic directed to it. Given that

these PMBO “robots” have demonstrated little evidence of any facility to determine the presence of existing traffic on their frequency channels, the potential for interference becomes significant. Worse, HF propagation characteristics are such to argue that any interference will often be international in nature.

The potential interference could be made more tolerable were the transmissions causing the interference to have a clear and demonstrated emergency nature, or even some essential and fitting amateur radio purpose. The fastest growing use of WL2K on HF bands, however, is anything but vital. Most of the users are employing WL2K and amateur radio licenses to avoid the need to pay for readily available fee-based “email-over-HF” services, and the promoters of the WL2K system have gone so far as to solicit new users through advertising and notices in sailing, travel and recreational vehicle magazines. While this may not be specifically illegal according to current FCC rules, it is clearly at odds with the spirit of the Part 97 regulations regarding the commercial uses of amateur radio. The end result of NPRM&O 05-235 can only accelerate the growth of this pseudo-commercial application over the next few years.

Though clear and compelling benefits may be derived from some combination of radio-linked internet communications, they will probably be the result of newer and possibly wider bandwidth protocols in the years ahead; no one has yet devised a way of stuffing more content into a message and increasing the speeds of transmission without occupying more and more bandwidth. If advancement is to occur without adding to both the regulatory burdens of the FCC and also avoid the imbroglios that often result from interference on increasingly crowded HF bands, such operations

either must be restricted to frequencies above 30MHz, or to sub-bands solely dedicated to their use. Such sub-bands are now designated for automatic, store-and-forward operations by current FCC regulations, but would be eliminated by the wide-open deregulation sought in RM-11305. Such sub-bands remain necessary to accommodate the so-called “semi-automatic” operations (“remotely controlled” operations) for in the final analysis there is no material difference between automatic and “semi-automatic” at a distance.

Unattended Operations at a Distance.

Due to the nature of High Frequency propagation, unattended operations by remotely operated mailbox systems can result in serious interference problems in ways that can only be controlled or avoided by regulation. Informal band plans and so-called “gentleman's agreements” are too easily disregarded without serious consequence, and experience shows that these mechanisms are rarely effective during times of extremely dense traffic (such as during popular contests or peak holiday periods).

The problem is an easy one: A conscientious operator will listen before beginning any transmission. This is a fundamental courtesy that nearly all operators employ as a matter of course. But, it is not a “fail-safe” system without a human operator at *each end* of the channel. Consider a simple scenario:

I am located in Ellicott City, Maryland, and I call a station in Saint Louis, Missouri. I am able to hear traffic clearly and easily determine that I am not interfering with anyone within the range of my transmitter. To my surprise,

however, the station in Missouri may inform me that our QSO is interfering with net traffic now taking place in Portland, Oregon, which is entirely outside of my range of “hearing.” If, instead of using phone for my traffic to Missouri, I employ a digital link to call up a mailbox at that location, there is no way for me to know that my traffic will interfere with the Portland net, and the interference I cause will be worse than that of an ordinary phone QSO because nobody in Portland will be able to break in and warn the Missouri “robot” that we are causing interference to their net. The result is anger and frustration in Portland at the disruption of their net, and they probably won’t even know who caused the interruption of their traffic, thus remaining vulnerable to future such occurrences.

As the control operator I have an obligation to “ensure the *immediate* proper operation of my station, regardless of the type of control I am exercising.”⁶ “Proper operation” includes the *deliberate* avoidance of causing *any* interference, unintentional or otherwise.⁷ I added emphasis in those sentences to underscore the importance of paying proper and close attention to the responsibilities of the control operator. Yet, *if I am unable to monitor effectively at the remote location, I may be causing such interference wholly without my knowledge or intent. This is nothing less than an abdication of my responsibilities as a control operator.* The station(s) being

⁶ §97.105(a) The control operator must ensure the immediate proper operation of the station, regardless of the type of control.

⁷ §97.101(b) Each station licensee and each control operator must cooperate in selecting transmitting channels and in making the most effective use of the amateur service frequencies. No frequency will be assigned for the exclusive use of any station....

(d) No amateur operator shall willfully or maliciously interfere with or cause interference to any radio communication or signal.

interfered with, however, may find cold comfort in my excuse for violating the rules. In such an instance, the Rules must provide more than guidance: the Rules must provide relief.

The elimination of any maximum bandwidth restriction on the remote operation of unattended systems will prove disastrous as more and more WL2K (or similar systems) become operational—it is important to realize that, while WL2K, itself, is a “membership” organization that seeks to regulate the location and operation of member PMBOs, there is nothing to prevent the addition and multiplication of other such systems employing wideband digital protocol robots once this rule has been amended. The 500Hz bandwidth limit imposed by present regulations (§97.221(c)) was the result of careful analysis of the needs of the time. That bandwidth was sufficient to include then-current protocols in use on the amateur service frequencies. Today, protocols up to 2.4 kHz are proposed for remote, unattended operation, increasing the potential for a plethora of new robot stations operating anywhere at all on HF bands. The result of this removal all restraint, however, will clearly be a drastic increase in the potential for interference, all the more so in light of the recent regulatory proposals that will probably result in a higher density of operators on HF bands, most of whom will be attempting to use phone operations of the very same bandwidth which the remotely controlled robots will dominate. I believe that it will prove to be a serious error for the FCC to acquiesce in this change.

In presenting the rationale for this rule change, the CTT states that “the voluntary selection of operating frequencies for improved spectrum use is best achieved through

real-time assessment of variables in propagation and radio traffic load.” The statement is fatuous: WL2K and similar operations will “camp” on a frequency and dominate it to the point of driving all other operations away. The robots cannot respond to query from any station other than one using a costly proprietary modem, and no effective means of monitoring by these machines has been demonstrated to be workable. Worse, the issue of “listen-first” is ineffective at a distance, even when the operator who would query a distant PMBO to retrieve email traffic takes the time to do so. The FCC recognized its responsibility to shield the bulk of amateur service frequencies from interference by such automatically controlled operations when it set aside specific frequencies for their operation in 1995. To abandon those sub-bands now is irresponsible, at best, and would be a clear abdication of the Commission’s mandate to provide equal access for all legal modes in use by licensed amateurs.

To repeat, the plain fact is that there is no material difference between automatically controlled operations and remotely controlled unattended mailbox operations *at a distance*. The remotely controlled unattended mailbox operations result in the very same type of interference the Commission then sought to ameliorate. The change the CTT now requests would turn that decision on its head and effectively throw open the HF bands to unattended/remotely controlled transmitters each using up to 500 percent greater bandwidth than permitted under the Rules at the time this comment is submitted.

Indeed the interference threat to HF operations that even the present Rules will present in light of both the potential fruits of NPRM&O 05-235 and the potential for

swift growth of new PacTOR II (or other) robots operating unfettered by the §97.221(c) limit calls into question the wisdom of retaining the present 500Hz limitation. A strong case can be made that *all* remotely controlled “store-and-forward” mailbox operations should be carried out within guarded sub-bands and simply regarded as automatic store-and-forward systems, which they are at a distance on HF *in effect if not in name*.

The mechanism exists to permit wide-band emergency communications access to frequencies outside of those sub-bands now designated for such use on an “as needed” basis, when these operations will provide an important and needed public service during times of clear and compelling emergency. These instances are sufficiently rare to preclude open access to “any open frequency” on any other basis.

In the most recent instances of serious emergencies in which amateur radio played a significant role, email message systems such as WL2K played an insignificant part, if any at all. Reviewing the various media reports lauding amateur efforts in the horrendous Indian Ocean tsunami and the devastation resulting from hurricanes Katrina and Rita, emergency communications were provided by amateurs using CW and SSB phone on HF, and FM handsets, mobiles and repeaters on VHF systems. I have found no mention of WL2K or email over HF systems in use during these events, even though the ARRL and WL2K have both touted the development of emergency communications systems employing the system.

The plain fact of the matter is that WL2K is just another store-and-forward system of very limited application during fast-changing emergency needs. When the

requirement is for the timely delivery of important information, such systems are dependent upon the internet service providers handling the emails, and on the immediate presence of a recipient to open, read and respond to the email. Instead of a step forward from ordinary HF packet operations, which employ a “mesh” topology to link multiple mailboxes for the handling of serially interleaved messages, WL2K may be seen as a step backward in that each transmitter must acquire a PMBO individually to pass its traffic, thereby holding all other traffic for that PMBO until that transmitter clears that message and the next message can begin. A failure of one PMBO will bring result in further delay of the traffic. Taken together with the resultant delays in forwarding and delivering the email traffic over an available internet link (which mostly depend on hardwired infrastructure, which is itself susceptible of severe damage), the touted speed may be seen as little more than a marketing fiction. Worse, the only means of increasing message handling capacity is to add more PMBOs (unlike ordinary HF packet, which can pass additional traffic by rerouting and/or increasing density in a mesh topology utilizing a number of stations simultaneously), WL2K’s only recourse is to add more PMBOs, each on its own frequency channel, thereby increasing the potential for more interference on already limited HF bands.

RM-11305 must be denied in total as being wholly without merit.